Secondary vertex finding

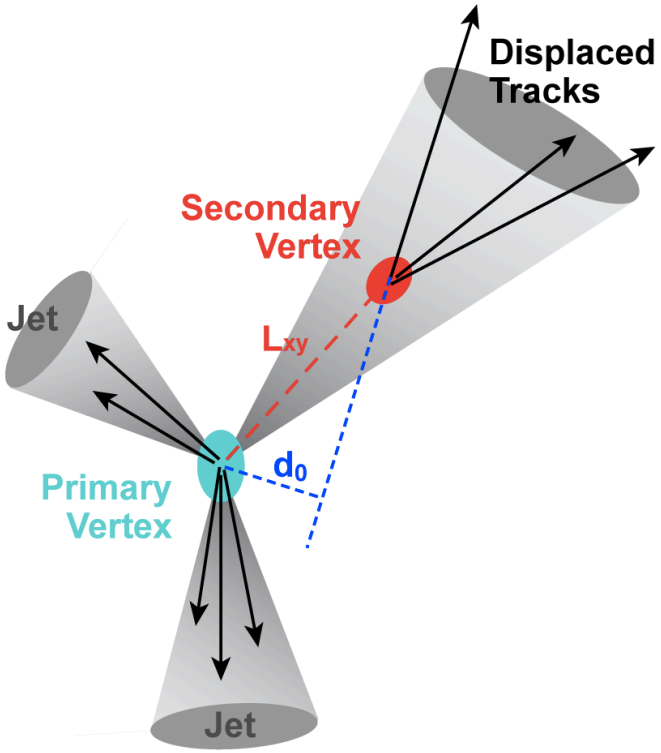
Sanghoon Lim

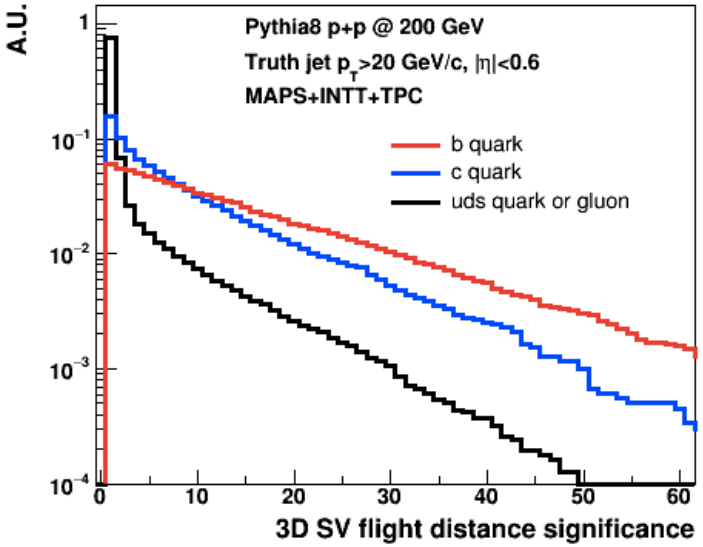
b-jet tagging with secondary vertex

- Vertex finding with RAVE
  - Use tracks from GenFit
  - Implemented in g4hough/PHG4TrackKalmanFitter.h(C)
  - Not updated yet in the main depository
  - A new “VertexMap” will be implemented for secondary vertex

b-jet tagging with secondary vertex

- Vertex finding procedure
  - Primary vertex finding
    - all tracks (chi2/ndf<5)
    - adaptive method for single vertex (“avf-smoothing”)
  - Secondary vertex finding
    - scan jets (currently using truth jets)
    - put tracks (chi2/ndf<5) associated with a single jet into the vertex finder (using matched reconstructed Svtx track with truth track)
    - adaptive method for multiple vertices (“avr-smoothing”)





Performance study in p+p collision

- Initial performance study has been done with PYTHIA MB
  - Scan the vertex map of secondary vertex
    - can access information of associated tracks w/ track index & track map
  - Calculate vertex p_T, 2nd vertex mass (assume pion)
    - vertex p_T / jet p_T is useful for improve b-jet purity
    - 2nd vertex mass distribution can be use to reject K^0 and decompose light/c/b-jets
  - Plan to update the performance plots with fixed tracking module for QM